

THE IMPACT OF MANAGING HOSPITAL CASE ON THE REACTIONS OF
SUBORDINATES

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THE IMPACT OF MANAGERIAL PERSONAL CUES ON THE REACTIONS OF
SUBORDINATES

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This study examines the impact of managers' nonverbal cues on interview ratings and job performance ratings mediated through the reactions of subordinates. As part of an interview validation study, simulated employment interviews with 119 first-level managers were recorded on videotape. Job performance ratings were gathered from immediate supervisors and interview ratings were gathered from Human Resources professionals within the firm. Visual nonverbal cues were judged by trained student raters. Audio nonverbal cues were objectively measured by feeding the audio portion of the videotapes into a computer voice analyzer.

The mediating variables are assessed "externally" through a distribution of managers' personality and others' personal reactions toward the manager. These data were collected in a laboratory study using student raters. Raters were exposed to only one channel of information from the manager, either the visual or the auditory channel. They made either attributions of the manager's personality based on Big Five dimensions or they gave their personal reactions to the manager. Personal reactions were based on 18 scale items asking such things as "how much do you think you would like this manager" and "how much would you trust this manager."

Auditory cues were significantly correlated with interview ratings, job performance ratings, personal, and extraversion attributions. Visual cues were significantly correlated with interview ratings, job performance ratings, extraversion attributions, conscientiousness attributions, and agreeableness attributions. Mediation tests found personal reactions and conscientiousness attributions to be causal mechanisms in the model for visual cues and interview ratings. Personal reactions, extraversion attributions, and conscientiousness attributions were all mechanisms in the model for audio cues and interview ratings. Finally, personal reactions mediated the relationship between audio cues and job performance ratings.

The effects of all variables on the validity of the interview was examined also. Significant variance was accounted for by nonverbal cues, especially smiling cues. An examination of similar usage of nonverbal cues, personality attributions, and personal narratives by interview return and job performance return using a frequency least model showed high common usage between rating types.

CHAPTER 1 INTRODUCTION

What determines interview performance ratings? Those who provide such ratings would like to think that the content of answers to interview questions determines the outcome of subsequent ratings. It is desirable, however, to believe that interview answer content is augmented by visual and auditory information, nonverbal cues.

Research on nonverbal behavior has found a significant main effect on interview ratings (e.g., Rossmore, 1984). Other, substantially lesser nonverbal behavior has a biasing effect on interview ratings. It has been shown that interviewers who use high levels of nonverbal cues are favored (Hochstet & Jellins, 1984). It has also been argued that when nonverbal cues used by interviewers are also correlated with job performance, those cues legitimately belong in the true score domain (Steinwaller, 1989). Thus, nonverbal cues might enhance interview validity or they may be sources of error (Harnett & Steinwaller, 1994).

In an employment interview, the interviewer has access to information about past job behavior through the content of answers. The interviewer can also observe expressions

management behavior used by the interviewers is an attempt to sway the interviewer's decision. One could argue that when interviewers' management behaviors reflect the desire to land the job and do not reflect actual intentions of job performance, the possibility exists for inaccurate ratings of interviewee performance. Another argument could be that interviewers are obtaining an immediate sense of the interviewee established by visual and vocal cues that may be valid. That is, the content of interviewers' impressions management behavior may not reflect future job performance, but the cues themselves may.

Valid predictions can be made from a combination of behavioral and nonbehavioral managerial cues (Burnett & Motowale, 1994). Furthermore, judgments based only on vocal cues correlate substantially with the same judgments based on only visual cues in the interview (Motowale & Burnett, 1998). Finally, traits related to managerial effectiveness can be accurately detected through visual cues or vocal cues alone. In structured interviews, the interviewer is trained to ignore these cues because they are assumed to cause rating error. However, considering that the cues are present, they are probably being attended to and used in making ratings. For the job performance rating, there are no immediate nonverbal cues like in an interview, thus, any relationship between these cues and performance

ratings may actually indicate low validity.

This research examines the relationships between both types of nonverbal cues, visual and audio, interview ratings and job performance ratings. A mediating model is offered with causal variables that may explain the relationship between nonverbal cues and both types of ratings. Then, interview validity is examined after partialling out the variance from nonverbal cues. Finally, a Horwich lens model is used to assess the degree to which interview raters and job performance raters similarly use nonverbal cues, personality attributions, and personal reactions to make their ratings.

CHAPTER 2 LITERATURE REVIEW

Research Model

This research examines effects of nonverbal cues on interview ratings and ratings of job performance. However, research examining the effect of nonverbal cues on interview ratings has not offered an empirical explanation for the relationship. Thus, this study attempts to discover why different cues are related to interview ratings, and even job performance ratings. To this end, Figure 2-1 shows the hypothesized mediating model that will be tested to explain the relationships between nonverbal cues and performance ratings, both interview and job performance.

Two variables are hypothesized to mediate the nonverbal cue--interview rating/job performance ratings correlation. At the top of the model is "personal reactions to cues." Personal reactions are the way a person effectively feels toward a speaker. Items asking such things as "how much do you think you would like this manager" and "how much would you trust this manager" reflect what is meant by personal



^a Performance ratings of two types: job performance and interview favorability

FIGURE 2-1
IMPACT OF DOWNWARD BIAS
ON PERFORMANCE RATINGS

reactions. If when the effects of personal reactions are controlled, the relationship between nonverbal cues and ratings drops, personal reactions to the speaker will be a partial explanation for the correlation between nonverbal cues and ratings.

Similarly, if the variance from personality attributions of the rater is partialled out and the correlation drops for cues and ratings, this variable will be a partial explanation. Personality attributions are assessments of personality traits made by a person about the speaker. In this case, attributions of managers' personality traits are made by raters trained to act like subordinates. To describe the links shown in the model, a review of the literature on each component follows:

Dependent Variables

In this study, two dependent variables are studied: interview ratings and job performance ratings. A review of the literature for each follows.

Interview Ratings

For years, researchers have tried to convince practitioners to rely less upon the interview as a sole selection device because its predictive validity is not as high as other predictors. Though ubiquitous in organizations, the interview suffered from the effects of the "received doctrine": poor validity and differential

validity due to idiosyncratic interview processes (current, 1970). However, recent research suggests that the interview may be more valid than previously believed (e.g., Waner & Cronshaw, 1988; Harris, 1988). Specifically, the use of a job analysis to base structured interview questions has dramatically improved validity. Much work has focused on developing different types of structured interviews in attempts to increase predictive validity. What might be more important now is to search for specific variables involved in the structured interview that affect the favorableness of interview ratings and ultimately, predictive validity of job performance.

Unstructured Interviews

By their very nature, unstructured interviews are construed as situations characterized by uncertainty and ambiguity (Harris, Salary, & Ferris, 1982). This type of interview works without a predetermined set of questions and usually without specific, behaviorally anchored rating scales. Interviewers ask what they feel are pertinent questions, then use their ability to make the best choices from among the candidates. Obviously, a great amount of variance is inherent in this style. An abundance of research has considered many variables that may have moderating effects on unstructured interview validity.

Individual Differences

Compounding the problem of different validities for interview formats is the issue of interviewer individual differences. Even if the most valid format is used, something about the interviewer could skew true scores. That is, some interviewers will be more valid than others. Therefore, if the most valid interview format can be found, and the best interviewers are selected, the possibility exists that training can occur to make them equally valid.

Some empirical research on the effectiveness of various interview training programs has occurred. Dougherty, Elzer, and Callender (1988) provided strong support for the thesis that some interviewers are more valid than others. They trained interviewers to elicit useful information and use it to rate interview dissimiles. What they found were large increases in the validity of interviewer judgments. Meurer and Fay (1988) conducted an experiment where training included eight hours of general skill development, such as note taking and rating errors like halo. However, they found no effect of the treatment on interviewer reliability. Conversely, Fay and Latham (1984) found training to combat rating errors actually decreased them.

The role of demographic variables for predicting interview outcomes and interview ratings appears more modest and limited than commonly believed (Harris & Carpenter, 1987).

In a review of the literature since Arvey and Campion's review (1982), Harris (1991) summarized studies done on the effect of race, age, and gender on interview ratings. He concluded that recent research has found little relationship between demographic variables and hiring outcomes.

Campion and Arvey (1988) noted that fewer than 1% of litigation in fair employment practice issues between 1978-1987 had anything to do with the selection interview. Nonetheless, legal problems in employee selection are always a salient issue. They summarized four areas that could be legally problematic in the interview: 1) preinterview detouring, or preinterviewing of applicants; 2) training and experience of interviewers; 3) potential interviewee behavior; and 4) subjectivity in evaluation. Employers are urged to pay close attention to these specific areas to enhance legal defensibility of the interview (Campion & Arvey, 1988).

Confirmatory bias, when people attempt to confirm their hypotheses about phenomena, is a source of individual differences among interviewers and is always suspect in social psychology research. However, in studies in an interview context, little evidence is found of this potential problem (e.g., Rockswold, 1983; McDonald & Sakai, 1983). It seems that confirmatory bias occurs only under a narrow set of conditions, unlike that of the interview

contact (Baron, 1994). Possibly, interviewers do not seek first depressions of applicants that they try to confirm throughout the interview. Perhaps it simply does not greatly affect final judgments.

Mood of the interviewer has been examined as a possible moderator of interview ratings (Kunda, 1997). Baron predicted that interviewers would assign higher ratings and reach more favorable employment decisions about interviewees who is in a positive rather than a negative mood (1997). His results confirmed this prediction and supported the previous finding that mood often exerts significant effects upon memory (e.g., Forgas et al., 1994).

Another possible threat to the validity of unstructured interviews comes from coaching for preparation of what might be called in unstructured interviews. This type of biasing activity occurs especially in campus recruiting at universities. Interviewees are provided with socially desirable answers to use in the interview in an effort to win impression management to land the job. Obviously, inappropriately influenced interviewer judgments may have no connection with the individual's potential performance at all. For example, Kacmar et al. (1996) did a study on impression management techniques used in interviews. They found that higher ratings would be given to an applicant who used self-focused impression management techniques than to

An applicant who used other-focused tactics, Self-focused techniques maintain attention on the candidate. The interviewee gives up being the focus of attention and instead employs more subtle mechanisms of influence when using other-focused tactics (Hansen et al., 1993). This study found when self-focused impression management tactics were used, the applicant received more job offers and fewer rejections than the group using the other-focused tactics.

More recent research provided robust evidence that these earlier findings on increased usage of impression management behaviors resulting in more job offers may generalize beyond the laboratory (Hansen & Brinkoff, 1994). That is, the positive relationship between applicants' impression management tactics and their actual interview outcomes was confirmed in a field setting (Hansen & Brinkoff, 1995). However, Baron (1988) found that there can be a "too much of a good thing" effect with impression management. Over several studies, he found that impression management techniques worked to an extent, then began to have negative effects on ratings (Baron, 1988).

To combat this problem, a widespread belief exists that computer administration of questions might help to avoid social desirability responses. Mermin and Hayes (1988) examined effects of different administration modes on interviewee responses. As expected, they found that the

least amount of socially desirable responding occurred in computer administration. However, Lutenbacher and Fisker (1990) found that computer administration led to increases in the impression management components of observed questionnaire scores. Clearly, removing the interviewer from the process does not seem to solve the problem of impression management caused bias:

Moreover, these findings make it important for the interviewer to be aware of the polished interviewee. The interviewer may believe he or she is hiring the best qualified candidate, but is really selecting the image portrayed by the applicant (Kaplan et al., 1992). Managing the impressions of an experienced interviewer may be more difficult, but since all applicants consistently approach an unstructured interview in a similar manner (i.e., to manage impressions with a self-focus), all interviewers expect the same type of behavior in the interview. This leaves room for the well-polished interviewee to reap the interviewer with a modified approach to "winning over" the interviewer, despite that interviewer's experience.

Hence, the low validity coefficients found for the unstructured format should not be unexpected due to any or all of the above threats. Based on results from their meta-analysis, Wiesner and Cronshaw (1988) call for a structured

on unstructured interview research and suggest that researchers should focus on structured interviews. Thus, many researchers have examined the effects of changing the format of the interview to a more structured approach in an effort to increase its validity.

Structured Interviews

There is support that structuring the employment interview will decrease the impact of the above described potential biases of the interviewers and raise the validity of the interview (e.g., Campion, Papperell, & Brown, 1989; Jett, 1986; Latham et al., 1986; Metcalfe et al., 1991). However, to pinpoint exactly what in structured interviews has caused this change is difficult. Structure is multidimensional and continues to evolve (Kipke & Guepjar, 1990). Typically, it involves the consistent application of predetermined rules. By applying these rules, the interviewer is relieved of having to decide what to ask while administering questioning across all interviewees. This forces the interviewer to ask the same questions, thus lowering cognitive demands on the interviewer (Morris & Fay, 1988). seemingly, the only drawback is the reduced discretionary control given to the interviewer that could disturb veteran interviewers who ask questions "by feel."

To differing degrees, the structured interviewing technique controls for problems inherent in unstructured interviews. Yet it is the increased validity attached to structured interviews that is of particular interest, though we do not know why structured interviews are more valid than unstructured interviews. Miphsy and Gough (1981) discuss distinct features of structured interviews that serve as potential sources of predictive validity. First, one reason that structured interviews are predictive might be that they assess job-related samples of applicant behavior (Miphsy & Gough, 1981). To the extent that applicant statements of past behavior are honest and free from social desirability biases, the descriptions of behaviors elicited from structured interviews reveal personal characteristics, thus increasing accurate judgment of the interviewee.

Another possible reason for the success of structured interviews is the attention the interviewer pays to diagnostic information about the applicant, allowing the interviewer to map job needs onto underlying attributes more accurately (Miphsy & Gough, 1981). Social cognition research offers yet another reason for variance between interview types: the coding and retrieving of information and the tendency to forget information by the interviewer (Ryer & Stoll, 1981). With most structured formats, notetaking is an integral part of gathering information.

Sketching has been shown to reduce error due to biases in the recall of information by the interviewer (Gorliss et al., 1972).

Another validity increasing feature of the structured interview is that it uses standardized rating procedures, while unstructured interviews are subjectively scored. Scoring is best done on behaviorally anchored rating scales that describe poor, average, and good performance (Kane, 1965). Systematic job analysis enhances the validity of structured interviews (Wiesner & Cronshaw, 1988), and is used in most structured interview forms presently available.

Furthermore, decomposing rating procedures yield higher quality judgments than holistic judgments typically made in unstructured interviews (Bickson & Hogearty, 1978). Indeed, statistical combinations of these decomposed ratings also may add validity to a structured interview (Hogdon, Parsons, & Brown, 1989; Kania, 1988). All factors seem to lead toward a general theme of standardization. Still, it is impossible to conclude that standardization is solely responsible for the success of structured interviews. Differences in some interview features may account for a large portion of the variance in predictive validities among alternative formats (Wiesner & Cronshaw, 1988).

Types of Structured Interviews

Situational Interview

The situational interview is based on a systematic job analysis known as the critical incident technique (Latham et al., 1980). When an incident is deemed critical to a specific job, a question is developed to find out how an applicant would behave in that situation. This format is a form of low-fidelity simulation (Schwolsky, Sametia, & Carter, 1989; Schwolsky & Higgins, 1993) because it presents job-like situations and asks applicants what they would do in those situations. The interview is conducted by a panel of two or more people. Responses are scored with a highly structured scoring guide.

Latham et al. (1980) try to argue that this type of interview is the only one grounded in theory, that being goal setting theory (Locke, 1968). The theory states that intentions are related to behavior. Latham et al. make the assumption that what interviewers say in an interview translates directly to what they would do on the job.

Behavioral Description Interview (BDI)

The BDI follows the folk psychology phrase, "the best predictor of future behavior is past behavior." As a basis for the BDI, four key types of interview information are assumed to be present (Jann, 1983). They are credentials, experience descriptions, opinions, and behavior.

descriptions. The FDC relies heavily on behavior descriptions because they reveal specific changes the applicant made in the past. Jones et al. (1988) suggest that the use of behavior descriptions measures typical rather than maximum performance and is the cause of the high validity associated with the FDC.

Similar to the situational interview, the FDC begins with a collection of critical incidents, using the incidents to suggest specific times in the applicant's experiences that are samples of critical behavior on the job (Jones, 1992). Preparing consists of assembling questions to guide the interview through these specific incidents. A typical FDC question would ask, "What did you do WHEN..." to get at specific behaviors in which the applicant has engaged (Jones et al., 1988). The interviewer does not have to ask the same questions of everyone. For example, if it appears an applicant has no relevant job experience, the pattern of questions would reflect relevant job experience. From the applicant's past behavior, this format will best predict future performance (Jones, 1992).

There has been some empirical support for the FDC; however, until single sites has been a problem in all cases. Regardless, statistically significant validity coefficients have been around .45 in the few studies done. Green (1988) reported predictive validities of .41 and .48 for the FDC

ranges .59 and .85 for the unstructured interview. A major problem with this format is the lack of a rating guide. Also, many pictures can occur, all of which would have to be redefined for direct comparison to other formats.

Comprehensive Structured Interview (CSI)

Proposed by Campion, Papperli, and Brown (1988), this technique is highly structured. It is constructed by following these six steps: developing questions based on job analysis, pose these questions to all candidates for employment, answer the rating scales for scoring the answers, use an interview panel to rate answers, consistently administer the process, and give special attention to job relatedness, fairness, and documentation in accordance with testing guidelines. In effect, this style combines all characteristics from both the situational interview and the PBOC.

Following these developmental procedures, Campion, Papperli and Brown (1988) built a 20-item interview. In their study of it, this interview had an internal consistency reliability of .78. Their reported validity coefficient between the interview and performance appraisal was .34 uncorrected, and .54 corrected for range restriction and criterion unreliability.

The large correlations in this study may suggest that the interview has a substantial job knowledge or cognition

ability component (Campion et al., 1986). This leads to treating the OSI as an orally assessed cognitive ability test. If given the same structure as the interview, the larger the correlation with cognitive ability tests. Given the predictive power and low cost of these tests, one might question the use of the interview at all. Campion et al. (1986) performed incremental validity analysis that revealed the interview added little additional explained variance over the aptitude tests. Conversely, the aptitude tests added additional validity to the interview alone.

Structured Behavioral Interview (SBI)

Motowale et al. (1990) describe this format as borrowing from both the patterned and situational styles. Its characteristics include the following:

- 1) it is based on a critical incident job analysis;
- 2) it is organized around behavioral dimensions discovered in the job analysis;
- 3) it uses a standard set of questions about how applicants handled past situations that are like situations that might happen on the job and that might elicit behavior representing an interview dimension;
- 4) the interviewer asks discretionary probing questions for details of the situation, the interviewee's behavior in it, and the outcome;

- 5) the interviewer takes notes as the interview progresses;
- 6) after performing all the above procedures and reviewing his or her notes, the interviewer rates the applicant on behaviorally anchored scales; and
- 7) the ratings are combined as an unweighted sum to yield a total interview score to guide selection decisions (Motowide et al., 1980).

This format is more structured than the patterned style because interviewers ask the same questions of all applicants. However, it is similar to the patterned style since it emphasizes questions that elicit descriptions of past behavior instead of hypothetical situations. Use of the behaviorally anchored rating scales is perhaps the best attribute borrowed from the structured interview. Other strengths are its "discretionary" component, that is, allowing for the interviewers to decide when and how to probe for additional information, and the rating key designed to avoid interviewer memory problems. This format seems to use all the positive aspects of its predecessors.

Support is evident for the reliability, criterion-related validity, and construct validity of the SBI (Motowide et al., 1981). The SBI was tested on a sample of approximately 500 interviewers, as opposed to the PBI that was tested using 25 interviewers. Results from a series of

studies by Motowidlo and his associates pointed to uncorrected validity of .33. Further, the interview's validity can be attributed to its behaviorally structured format and that interviewers who follow the format most closely make the most accurate judgments about interviewees (Motowidlo et al., 1988).

Summary: Interview Ratings

The preceding review of the interview literature shows that structured interviews allow the least chance of avoiding rater biases, impression management, and other forms of interview rating errors. To the extent that interview ratings are made using the facets of structured interviews, the effects of non-rater bias on interview ratings can be attributed to non-structured aspects.

Job Performance Ratings

Job performance is typically measured with a performance appraisal. Performance appraisal is the process by which an observer, usually a direct supervisor, rates the job performance of a subordinate. The first problem is determining what is performance. The supervisor must choose whether to attempt to rate the behaviors observed on the job or try to quantify the volume of the subordinate's work. This is a problem of judgment of performance versus measurement of performance.

Judgment of Performance

If judgment of performance is deemed appropriate, one must deal with idiosyncratic processes used by different raters. The cognitive process used to judge performance is given in a model described by Daniel, Calkins, and Kaplan (1984). There are six steps:

- 1) observe behavior,
- 2) form some cognitive representation of observed behavior,
- 3) store the representation in memory,
- 4) retrieve stored information to make judgments,
- 5) integrate this information with other information available; and
- 6) render evaluations using a suitable instrument.

Staw and Lichtenstein (1978) concluded that judges have difficulty weighting and combining information causing them to resort to simplified decision strategies.

Potential problems exist at each point of this process, but evaluative integration, where one must recall behavior and weight it (Rogan & Feldman, 1984), is a main problem. One cause of this problem may be that social and situational constraints on supervisor ratings are present (Judge & Ferris, 1987). In this research, a link between supervisor inference of a subordinate's self rating and the

supervisor's rating was biased. This may indicate an accountability to subordinates of another social context. Researchers can minimize these problems by gathering performance appraisals made exclusively for the research purposes.

Measurement of Performance

Measurement of performance is the other problem in performance appraisal. To adequately measure performance, one must use proper methods and have access to a valid input of performance that samples the entire performance domain. Since few firms have direct outcome measures suitable for overall performance measures, performance appraisals are accepted as best surrogate measure of performance. One advantage of supervisory ratings of performance is their flexibility. Performance can be indexed to any dimension for which a definition can be articulated and a rating scale designed (Barman, 1990). Other advantages include not being artificial like a work sample, and they are avoid contamination and deficiency (Barman, 1991). These issues arise when trying to evaluate these ratings for usefulness.

Three main types of criteria are used to assess the usefulness of performance appraisal data: rating errors, accuracy, and psychometric properties. Errors such as halo, leniency, range restriction, and distortion can occur. Thus, they can be used to evaluate performance appraisals. Halo

is shown by the intercorrelations among dimension ratings-- tendency is a shift of item ratings away from a scale midpoint. Range restriction is a measure of the extent to which a distribution clusters around a central point. Distortion represents the inappropriate weighting of dimensions. Though used often to assess the usefulness of performance appraisal data, there is some question if they really are rating errors (Hooper, 1961; Murphy & Cleveland, 1994).

A meta-analysis performed by Murphy and Baines (1989) showed no strong correlation between errors and accuracy. They reviewed 18 separate studies and found an average correlation of -.43 (corrected to -.34). They conclude that rater errors seem to contribute to accuracy. Barker and Gandy (1994) statistically controlled for halo and it did not improve the validity of the ratings. They, too, conclude there may be some truth in effects of halo.

Accuracy is widely used to understand the usefulness of performance appraisal data because it requires both the correct rank order and correct absolute level against target scores (Korman, 1981). However, many measures of accuracy exist. Cronbach wrote four different studies defining overall ratings and then broke into four components (Cronbach, 1955):

- 1) elevation, which is difference between observed and true grand mean;
- 2) differential elevation, the accuracy in differentiating among raters across dimensions (main effect of rater);
- 3) stereotype accuracy, reflecting difference among dimensions averaged over raters (main effect of dimension); and
- 4) differential accuracy, or rater differences in patterns of performance (rater times dimension interaction).

Borman (1977) used an index that he termed differential accuracy, but it really shows the validity of the ratings since it was only the correlational component of the psychometric definition of accuracy.

Murphy and Cleveland (1990) believe differential elevation is the best measure of accuracy. Some, however, do not even advocate accurate evaluations. Longenecker, Sims, and Glisz (1987) suggest the use of the performance appraisal to determine in what is important, not to get accurate assessments of job performance. What this shows is multiple uses for the performance appraisal.

The final method to assess usefulness of performance appraisals is through psychometric criteria. Though internal consistency reliability is used often Murphy &

Cleveland, 1981b). It is not appropriate because the dimensions should be giving distinct information about job performance. Interrater reliability is more appropriate in this instance. It suggests that raters are focusing on similar samples of job behavior (Korman, 1980), but it can still represent shared biases of a few raters.

Construct validity as a psychometric property of supervisory ratings is useful as an indirect measure of accuracy (Mehley & Cleveland, 1991). If the ratings do not suffer from distributional errors, idiosyncratic halo, leniency/severity, or other biases, the ratings should converge on the desired construct of job performance. Limited research is available concerning construct validity of ratings. However, if raters consistently agree, this is indirect evidence of construct validity.

For example, Harris and Mohanmmed (1988) found an average correlation of .48 between peer and supervisor ratings. They also found that self and supervisor ratings converged ($r = .50$) as well as self and peer evaluations ($r = .36$, all corrected for attenuation). This is evidence of convergent validity.

There is further evidence of convergent validity between subjective and objective measures of performance. To the extent that ratings are correlated with objective measures of job performance, ratings are capturing true

performance (Korman, 1961). Finally, validities for selection basis predicting supervisory ratings are as high as validities for selection basis predicting objective measures of job performance (Schmidt et al., 1986).

Since performance appraisals are accepted as the best available method of evaluating individual performance, accuracy is the main goal for research. If selection of raters is made carefully and proper training is given to raters, accuracy is enhanced (Korman, 1961). Still, the problem of making the rater attend to the task to do is properly still exists. One way to motivate raters to be accurate is to hold them accountable for their ratings. This leads raters to make accurate ratings, partly by reducing their reliance on irrelevant factors (Warr & Motowale, 1984). Accountability forces raters to make the task a main responsibility and thus reduces reliance on other factors that do not help make good ratings (Detert, 1995). Raters engage in a more active process of gathering information and of considering implications of that information (Warr & Motowale, 1984).

Summary: Job Performance Ratings

Raters must be willing to give accurate ratings as any discussion of their ability to do so is irrelevant. Rating quality is related to the conditions of rating context, and possibly not related to idiosyncratic rater effects (Warr &

Worwillo, 1975). From a research perspective, to insure that performance raters give ratings as accurately as possible, it seems imperative that job performance ratings made exclusively for research purposes are gathered. If supervisors know that their ratings are not going to be used as part of the subordinate's personnel file, they should be willing to be honest in their assessments. Finally, the use of instrumentally obtained rating scales would be obtaining accurate ratings.

Interviewed Variables

Types of Interview Cues

Two types of nonverbal variables exist: behavioral and non-behavioral (De Meuse, 1987). In his review of the effects of nonverbal cues on performance appraisal, De Meuse states that most of the research has focused on demographic cues (non-behavioral) and has ignored the potential interactions with physical appearance variables (non-behavioral) and behavioral variables such as paralinguistic cues (1987). Nevertheless, the interactive nature between nonverbal cues and verbal communication between subordinates and superiors is emphasized in the limited research done in this vein (De Meuse, 1987):

More research has examined the effects of nonverbal cues on interview ratings. The research in this vein has broken behavioral and nonbehavioral cues into dynamic,

status, and participation cues. Optimum cues are easily changed such as eye contact, body orientation, smiling, gesturing and hand movement. Status cues are demographic variables and physical attractiveness. Participation cues refer to vocal characteristics such as speech rate, volume, tone and pausing. As in the performance appraisal literature, however, much of the research has focused on visual cues.

Visual Cues

Visual cues can have powerful effects on the favorability of interview ratings. For instance, the relationship between favorable ratings and physical attractiveness has been shown (Diploia, Arvey, & Tugstue, 1977; Katz & Gershman, 1967) as has the clothing worn in an interview (Forsyth, Drake, & Cox, 1984). Hand gestures, smiling, and the manner that a job applicant presents his or her body with regard to the interviewer all have had effects on interview ratings (Grifford, Wg, & Williams, 1985; Harrison, 1984; Paries & Jackson, 1980; Hollanderworth, Baskie, Stevens, & Ocasal, 1979; Inada & Sakai, 1977). Finally, high levels of eye contact indicate dominance in face to face interactions (Watkins, 1984) and have been shown to affect judgments of applicant qualifications (Fraser & Aida, 1984). Thus, five visual nonverbal cues stand out as having been examined for their effects in

organizational settings, physical attractiveness, smiling, gaze, hand movement, and body orientation.

High levels of each of these individual variations are hypothesized to positively relate to interview and job performance ratings. Since each variable by itself may only have a small relationship with the dependent variables, an additive combination of all five variables more accurately represents the combined effects of visual cues. Following previous findings, this composite variable is defined as follows:

$$\text{Visual cue Index} = \text{Gaze} + \text{Smiling} + \text{Gesturing} + \\ \text{Physical Attractiveness} + \text{Body lean}$$

An index variable such as this can then be examined for overall effects of visual cues on interview and job performance ratings. Therefore, the first set of hypotheses to test the model in Figure 3-4 is:

Hypothesis 1a Visual cues are positively related to interview judgments.

Hypothesis 1b Visual cues are positively related to job performance ratings.

Audio Cues

Little work has been undertaken to examine the impact of audio cues. A typical study isolates some paralinguistic cues, such as speech rate and pausing, and gathers subjective ratings to measure them. For instance, one study

found those job candidates who panic before answering, focus on key interview words, and organize their answers before responding decreased speech disturbances and improved their speech fluency (McIntosh et al., 1978). Speech fluency was related to interview ratings.

However, this case study measured loudness of voice, but found no significant relation to the employment decision. One could speculate on three key reasons. First, reliability as a psychometric property was not examined. What one rater thinks is a loud voice, the next may not. Thus, loudness of voice, for example, should not be dismissed as unrelated to employment decisions unless reliability of ratings is assumed, or another method of assessment is found. An alternative way to measure vocal characteristics is objectively with the use of computers. Before discussing objective measurement of vocal characteristics, a closer look at voice nonverbal cues, or voice characteristics is needed.

Voice Characteristics

Evidence exists that voice characteristics are indicators of one's personality or even the emotional state of speakers (Highwanger & Martin, 1981). Highwanger and Martin (1981) noted that voice pitch analysis was useful in marketing research--changes in emotion can be detected through pitch changes in the voice. This is one of the

technologies that lie detectors use. However, a speaker has relatively little control over permanent voice quality nor can voice quality be completely suppressed or disguised (Hirvonen & Mathieson, 1988), though accomplished speakers can use different patterns of vocal cues when deemed appropriate (Pearce & Brownell, 1972). Thus, voice characteristics are stable attributes of a person and they may indicate individual traits.

Some work has been done toward tying a person's speech behavior to organizational consequences. Patterns of individual sound production were predictive of success in two different situations (Roseny, 1974; Roseny & Schuchail, 1974). Based on these findings, the assumption was made that successful individuals in management should have normal communication ability and unsuccessful individuals would have disturbed patterns of communication (Roseny, Morrison, & Bacon, 1975). This assumption was supported in their study that used data from executives at three levels of success. They concluded successful managers had different psychological characteristics than unsuccessful managers and this could be inferred from speech behaviors (Roseny, Morrison, & Bacon, 1975). Thus, there may be a practical use for knowing individual differences in voice characteristics. If specific characteristics of the voice can be reliably measured, their effects on job performance

ratings and interviewer ratings could be examined.

Fundamental Frequency (Pitch)

One voice characteristic that has been hardly studied is fundamental frequency (FF), or the pitch of a voice. Some researchers have suggested that future academic success can be predicted with voice pitch and range (Kreuzer & Rothstein, 1975). More successful students have been found to use higher pitch, less volume, and more appropriate intonation than less successful peers (Edwards, 1982). Blust and Lofgren (1984) found more successful phone interviewers had higher FF and greater range in FF than less successful interviewers.

Schwan, London, and Wolf (1970) found higher pitch levels increased impressions of competence, dominance, and assertiveness. Aronovitch (1976) found this to be true for women, but not for men. Scharer (1978) explains this as follows. As pitch rises to a threshold of about 180 Hz in men, favorable impressions rise also, but past this point, and as the pitch approaches female levels, impressions quickly become unfavorable.

In selection research, it would be interesting to know if "high" and "low" voice are correlated with job performance. Do women, or high voice individuals, receive higher performance judgments? Do low voice individuals receive lower ratings from those judging their performance?

from videotapes? One might argue that raters of performance who have limited access to the rater's behaviors may give higher ratings to a low voiced female, and to a low voiced male. This reflects common stereotypes of the effective business leader: low voiced individuals are considered better managers through guiding compliance of followers via a dominant sounding voice. Social information processing theory suggests that people make summary judgments of suitability for leadership based on observations of prototypical attributes (Balewider & Dittmann, 1981).
Range of Pitch

Another voice characteristic that may reflect positive managerial traits is the range of frequency an individual uses when speaking. A general assumption is made that a speaker is dynamic and an extrovert if the pitch is varied widely (e.g., Grosse & Mathison, 1989; Scherer, 1978). For instance, Scherer (1978) found that greater pitch variability is linked to perceived speaker dynamism, power, extraversion, and benevolence (likeability). Those who use a small range would sound monotone, and may be considered boring. Brown, Hornig, and Schaffer (1973) manipulated the variance of PF as a lab study and found that increased variance of PF made the speaker sound more benevolent, and to a lesser extent, more competent. Less variation of PF had the opposite effect in this controlled

experiment. Therefore, speakers using a larger range of F0, those who vary their voices considerably, might be considered more charismatic and have their performance rated more favorably.

Speech Rate

Rate of speech may be positively related to ratings of performance, but only to a certain point. Brown (1980) shows a curvilinear relationship between rate and variability. Heavensizes has rate of speech consider rates initially attributed up to 187-224 syllables per minute, but after about 224 s p m, decrease in attractiveness (Brown, 1980).

Most studies have found faster speech rates increase competence and attractiveness perceptions (e.g., Mehrabian & Williams, 1969; Finken & Brunel, 1972; Baller et al., 1982). Brown, Simpson, and Langford, (1972) found that slowing the speech rate makes the voice sound less competent, but, increased rate making the voice sound less benevolent. Those who speak more slowly may be perceived as less intelligent or "handicapped" (Williams, 1969). Finally, slow speech is associated with low vocal pitch is recognized as an indication of anxiety or despair (Mehrabian, 1966).

Voice Pauses

A related variable is voice breaks, or pauses. Effective use of pauses can call attention to particular ideas, and unfilled pauses used in strategic locations can enhance speech (Feldman & Rhee, 1993). If the pauses are used such that they contribute to the speaker becoming more fluent, then pausing is good. Hollanderworth, Karamitina, Hivens, and Brownell (1978) found fluency of speech strongly contributes to the employment decision. These authors found if a candidate pauses before answering a question, speech fluency is improved and favorable interview evaluations result.

Amplitude Variability

Up to a moderately high level, vocal intensity, or loudness, is positively related to impressions of extroversion, sociability, and dominance (Grossowitch, 1994; Scherer, 1994). Conversational speech measured three feet from the speaker has an average intensity of 60 decibels (dB), quiet speech is approximately 30-40 dB, and shouting is 70 dB (Fry, 1989). However, the variability of this intensity provides quite different information about the speaker. Amplitude perturbation is short term instability of the intensity on a vocal signal (Scherer & Matheson, 1990). Also called shimmer, measurement of this quality quantifies the variability of the intensity (amplitude) of

the voice. This variability has been associated with the perception of harshness, a vocal quality that is undesirable (Jahn, 1977). A smooth speaker, one who would evoke higher favorability judgments, would have low levels of harshness.

In sum, then, certain voice characteristics may correlate with different performance ratings because of the "pleasantness" of the voice sound or the way that the voice falls into stereotypes of the genders and builds of what constitutes "good" managers. Fourthly, voice characteristics affect contextual performance by getting others to perform better. For instance, a manager with a "pleasant" sounding voice may induce followers to exhibit more helping behavior, and thus, increase the effectiveness of the manager. Research has shown evidence of the presence of an "attractive voice" (Buckram & Driver, 1991; Buckram & Miyake, 1991; Buckram, Hodgins, & Miyake, 1990). Thus, a combination of audio cues described here may encompass this attractive voice. A review of the attractive voice literature may help to see its organizational significance as an indicator of voice cues.

Attractive Voices

Every voice is unique to the speaker (Hirsch & Rothstein, 1999). Some voices are more "attractive" sounding than others. It is possible that attractive voices

are associated with more favorable impressions similarly to the physical attractiveness stereotype. Studies have shown that attractive people actually develop more favorable attitudes and manifest more confident behavior patterns (Hackerman & Driver, 1980). These authors propose a vocal attractiveness stereotype that will represent the influence of the auditory portion of appearance such like the physical attractiveness stereotype that represents the influence of the visual portion of appearance.

To the extent that impressions vary as a function of vocal characteristics, these impressions likely will vary as a function of vocal attractiveness (Hackerman & Driver, 1980). If there exists reliability among raters of attractive voices, the case can be made for a vocal stereotype. This research has been performed and shows that observers can agree on whether or not a voice is attractive, with inter-rater reliability estimates averaging .85 (Hackerman & Riggs, 1980).

Furthermore, Hackerman and Driver (1980) found that women with more attractive voices were rated more favorably than women with less attractive voices. These authors point out that their finding is robust, since the effects have been replicated across two studies. However, they were unsuccessful in determining the dimensions of a vocal stereotype. Vocal attractiveness had greater effects

an attribution of dominance in one study, but larger effects on likeability in their second study. In an effort to elaborate upon these findings, Buckram, Rodina, and Miyake (1998) used the HHO subscale of personality (Costa & McCrae, 1988). Results from this study point to an attractive voice that judges find lacks tension, but has the presence of confidence without giving an indication of whether the person is good-natured (Buckram, Rodina, & Miyake, 1998).

Familiarity weakens effects of the vocal attractiveness stereotype when ratings are used to describe targets (Buckram, Rodina, & Miyake, 1998). Perhaps objective measures of voice characterization can better explain what determines a vocal attractiveness stereotype. Buckram and Miyake (2000) looked at both subjective and objective measures of voice quality as general favorableness of impressions. They found that both types of measures predicted vocal attractiveness. However, if an objective way to measure vocal cues were available, the problems inherent in subjective ratings of attractive voice could be avoided.

From this review, five audio variables have been shown to represent vocal attractiveness adequately. These five variables could be combined to form an overall vocal attractiveness measure, as the audio cues in Figure 3-1.

The literature review presented supports the following combination of these variables that form an index where high values are hypothesized to lead to higher ratings of performance:

$$\text{Audio Cue Index} = \text{Speech Rate} + \text{Voice Breaks} + \text{Range of Pitch} + \text{Amplitude Variability} + \text{Pitch}$$

With this index representing audio cues, the next set of hypotheses are:

Hypothesis 1a Audio cues are positively related to interview judgments.

Hypothesis 1b Audio cues are positively related to ratings of job performance.

Nonverbal Variables

Smiling in Conversational Cues

When a speaker has an attractive voice combined with physical attractiveness, often favorable ratings can result. This combination also could be explained as social competence, since conversational behavior has been argued as a manifestation of social competence (Folstein, Philippot, & Guetli, 1991). Though social competence is difficult to define, it broadly relates to evaluation judgments of the adequacy of a person's social performance. Interview favorability could be associated with the concept of social competence. If an interviewee displays positive social

performance in the interview, more favorable ratings would result.

Nonverbal cues may elicit personal reactions toward the speaker. In de Meuse's (1985) model of the impact of nonverbal cues on the performance appraisal process, two dimensions of interpersonal behavior, affective evaluation and perceived power, mediate the relationship between nonverbal cues and performance ratings. Affective evaluation represents the degree of liking the rater has for the rates. Perceived power reflects the amount of informal dominance the rater has in the rater/ratee relationship (Mehrabian, 1988). This model predicts that the impact of nonverbal cues on ratings of performance is mediated by the degree to which the rater is judged positively on affective qualities. Empirical support has been found for the model (e.g., Klinger & Patterson, 1983; McComblin, 1973; Schlenker, 1980). However, the mediating variable "perceived power of the rater" is not relevant concerning interview ratings, since the interviewer has little power in this situation. Thus, that link will not be examined here. Nevertheless, the other mediating variable in this model, "affective evaluation of the rater," is relevant in both job performance appraisal and interview performance appraisal. This affective evaluation may encompass several different personal reaction variables.

Verbal Reactions

The literature has examined the effects of personal reaction variables. For instance, about a third of the variance of amount of liking felt by strangers on first meeting is accounted for by nonverbal cues (Maxwell, Cook, & Burr, 1985). These positive first impressions are gained by using the expressive behaviors gestural fluency, speaking fluency, and body emphasis such as head movements, etc. (Koppie & Friedman, 1986). Generally, positive evaluations are attributed to those performing behaviors that are more active (Burton & Fiske, 1981). Those who use more active expressive behaviors (i.e., more gestures, more vocal range, etc.) increase the attention paid to them by the observer that in turn, may cause attitudinal evaluations to become more positive (Taggar & Fiske, 1978). Koppie and Friedman (1986) found strong relations between nonverbal cues and likability, especially speaking fluency for men and facial expressions for women.

Nonverbal variables associated with an individual's level of persuasiveness have been examined also. For example, physically attractive people have been found more persuasive than unattractive people (Chaiken, 1978). Facial expressions in particular has been shown to interact with speaker credibility in determining attitude change as a result of persuasive speech (Brownlee, 1982). Surgeson

(1986) found a positive relationship between gaze and persuasiveness:

Audio cues that convey pleasantness foster favorable credibility judgments and have been associated with persuasiveness (Burgoon, Rich, & Shea, 1998). These researchers interpret their findings to mean that credibility and persuasiveness are simultaneous outcomes directly influenced by several variables. Other audio cues have been positively correlated with persuasiveness such as range of fundamental frequency (Burgoon, 1990), pitch (Hart & Lehen, 1994), and speech rate (Burgoon, 1994).

Competence as a personality trait has been shown to correlate with nonverbal cues. Zuckerman, London, and Hall (1978) found some vocal characteristics increased impressions of competence, dominance, and assertiveness: Range of F₀, which indicates expression voice, increased perceptions of competence in speakers (Fleisch & Corbridge, 1971; Ray, 1974; Burgoon, 1993). Visual cues such as physical attractiveness (Hendling et al., 1978), smile (Chaiken, 1978), and gaze (Folger & Sporer, 1978) all have been positively related with competence.

Individuals who were physically attractive (Carnegie, 1978), who smiled a lot (La France & Roski, 1983), and who gazed directly at the listener (Burgoon et al., 1994) were

seem as more trustworthy than those who exhibited low levels of these variables. Similarly, listeners were more apt to comply with operators who called a job (P'quin & Aronoff, 1981) and who held the gaze of the listener (Willis & Ross, 1983). Speech rate has been shown to increase levels of compliance also (Miller & Jones, 1968).

Finally, the degree to which one will help another has been explored with regard to nonverbal cues. Volantini (1982) found a positive relationship between gaze and helping behavior. In another study, expressive voice (range of F₀) was related to increased helping (Goldman & Fordyce, 1981). Thus, the literature has shown several personal reaction variables to be related to nonverbal cues.

Summary: Personal Reactions to Nonverbal Cues

The relationship between nonverbal cues and personal reaction variables has been established from the review above. A variable that carries the combined effects of personal reactions will be used in this study. This index represents the degree of trust in the speaker (trust), degree of liking felt for the speaker (liking), degree to which the listener feels the persuaded by the speaker (persuaded), degree of competence felt toward the speaker (competent), degree of dominance listener feels the speaker has (dominant), degree to which one would comply with the

speaker (empathy), and degree to which one would help the speaker (help). The variable is combined as follows:

$$\text{Personal Reactions} = \text{Trust} + \text{liking} + \text{Favorable} + \\ \text{Competent} + \text{Dominant} + \text{Comply} + \text{Help}$$

If the effects of nonverbal cues on these personal reactions to a speaker can be shown in the context of the manager/subordinates relationship, important implications for contextual job performance and interview favorability can be quantified. Thus,

Hypothesis 1a Visual cues are positively related to personal reactions.

Hypothesis 1b Audio cues are positively related to personal reactions.

Contextual Reactions, Personality Traits

Nonverbal cues also may reflect underlying personality traits related to patterns of behavior that lead to favorable judgments. Behavior that comprises dimensions on which judgments are made overlap with the Big Five personality structure. This follows the logic of a trait theory of personality, one that views individual differences in behavior as organized by stable, consistent dispositions in individuals. Behavior is consistent across time and situations and should be predictable from the assessed traits. Since the relationship between extraversion, agreeableness, and conscientiousness has been established

with organizationally relevant outcomes (e.g., Ferrick & Kunda, 1981), it is desirable for this study to find specific Big 5 personality factor correlates of ascribed ones. Then, we can examine the hypothesized link between ascribed ones and ratings of performance by looking at their relationship with attributions of personality variables.

It is not that difficult to infer accurately personality traits on acquaintances, or even people to whom we have minimal exposure to their behavior (e.g., Fiske, 1977; Kenny & La Voie, 1986; Furr, 1994). One would think it much more difficult to infer personality traits on individuals with whom one has zero acquaintance. However, research has shown that even at zero acquaintance perceivers can make consistent summary judgments on strangers (e.g., Allbright et al., 1989; Fiske & Linder, 1980; Fiske, 1980; Fiske & Goldberg, 1986; Fiske, 1981). However, Kenny et al. (1988) note that only extraversion and conscientiousness are consistently attributed by others from zero acquaintance studies. Agreeableness was the least difficult of the Big 5 factors to attribute to strangers. Thus, though agreeableness is associated with some organizationally relevant outcomes, it may not be as useful in zero acquaintance situations. The data in this study

On the other hand, research has shown that people can accurately attribute extraversion and conscientiousness to others. To illustrate, a study by Berkman and Liebler (1992) showed some agreement on nonverbal cue usage across personality factors. One hundred subjects were videotaped while entering and walking around a room, sitting, then reading a standard test. Twenty-four raters gave personality ratings of the experimental subjects, based on the Big Five dimensions. These ratings formed an attribution measure of the traits made by others to compare with self ratings. The four conditions for rating were silent film, still pictures, audiotape, or sound-film.

Significant results were found for the correlation between extraversion and soft voice for self ratings ($r = .38$) and even stronger with the percept ratings ($r = .42$). Powerful voice also was related to extraversion with the same pattern between self and percept ratings ($r = .3$, $r = .64$). Conscientiousness was positively related to high voice using self ratings ($r = .23$) and with perceivers' ratings ($r = .42$). Though additional significant correlations with other voice characteristics were found, they did not match with the self ratings in this study.

Further evidence of this consistent relationship between Big Five personality factors and both types of nonverbal cues is available. Perceptions of others'

conscientiousness have been positively correlated with gaze and speaking fluency (Funder & Speed, 1984), speech rate (Korowitch, 1979), and hand movement (Berkman & Liebler, 1982). Agreeableness has been strongly related to all visual cues (Berkman & Liebler, 1982; Funder & Speed, 1984), but little evidence has supported the relationship between social cues and agreeableness. This may reflect the difficulty of inferring agreeableness at mere acquaintance with the subject (Gibbitts, Kewey, & Mallory, 1989).

Besides the relationships described above, physical attractiveness (Roney et al., 1982) and early audio cues (Korowitch, 1979) have been positively correlated with extraversion. Adigic and Friedman (1984) found a strong relationship between speaking fluency, sartorial fluency and extraversion. Though extraversion has been the easiest of the Big Five personality factors to infer upon others, given certain nonverbal cues only, conscientiousness and agreeableness to a lesser degree should be related to nonverbal cues since they are related to interview ratings and job performance ratings. Therefore,

Synthesis 3a: Visual cues are positively related to visual personality attributions of extraversion.

Synthesis 3b: Visual cues are positively related to visual personality attributions of conscientiousness.

Hypothesis 1a: Visual cues are positively related to visual personality attributions of agreeableness.

Hypothesis 1b: Audio cues are positively related to visual personality attributions of extraversion.

Hypothesis 1c: Audio cues are positively related to visual personality attributions of conscientiousness.

Hypothesis 1d: Audio cues are positively related to visual personality attributions of agreeableness.

Research Model Testings Part 2a

To this point, this work has hypothesized about the importance of audio and physical characteristics in determining favorable interview ratings and ratings of job performance by empirically examining the links shown in Figure 1-1. Following Baron and Kenny (1986), if significant relationships are uncovered in the first four sets of hypotheses, the final test of the mediating model can be executed. For visual cues and interview judgments,

Hypothesis 2a: The effect of visual cues on interview judgments is mediated by visual personal reactions.

Hypothesis 2b: The effect of visual cues on interview judgments is mediated by visual personality attributions of extraversion.

Hypothesis 2c: The effect of visual cues on interview judgments is mediated by visual personality attributions of conscientiousness.

Hypothesis 3d. The effect of visual cues on interview judgments is mediated by visual personality attributions of agreeableness.

Similarly, the model will be tested for mediating effects of the relationship between audio cues and interview judgments.

Hypothesis 3e. The effect of audio cues on interview judgments is mediated by audio personal reactions.

Hypothesis 3f. The effect of audio cues on interview judgments is mediated by audio personality attributions of extroversion.

Hypothesis 3g. The effect of audio cues on interview judgments is mediated by audio personality attributions of conscientiousness.

Hypothesis 3h. The effect of audio cues on interview judgments is mediated by audio personality attributions of agreeableness.

The preceding tests will have examined all links in Figure 3-3 with interview judgments as the dependent variable. The hypotheses in set H1 and H2 also will be tested with job performance ratings as the dependent variable. To link visual and audio cues in the interview to job performance ratings, the assumption is made that the cues cues are expressed on the job and perceived by job performance ratings. For visual cues,

Hypothesis 1a: The effect of visual cues on job performance ratings is mediated by visual personality attributions of extraversion.

Hypothesis 1b: The effect of visual cues on job performance ratings is mediated by visual personality attributions of neuroticism.

Hypothesis 1c: The effect of visual cues on job performance ratings is mediated by visual personality attributions of conscientiousness.

Hypothesis 1d: The effect of visual cues on job performance ratings is mediated by visual personality attributions of agreeableness.

Finally, to complete analysis from Part One, the following hypotheses predict mediating effects with audio cues and job performance ratings:

Hypothesis 2a: The effect of audio cues on job performance ratings is mediated by audio personal reactions.

Hypothesis 2b: The effect of audio cues on job performance ratings is mediated by audio personality attributions of extraversion.

Hypothesis 2c: The effect of audio cues on job performance ratings is mediated by audio personality attributions of neuroticism.

Hypothesis 1d: The effect of audio cues on job performance ratings is mediated by audio personality attributions of agreeableness.

Research Model Testing Part Two

If the above hypotheses hold, specific, partial explanations for the relationships between nonverbal cues and both interview favorability and job performance ratings will be evident. In the first section of Part Two, the validity coefficient between the interview ratings and the job performance ratings partialling out the influence of nonverbal cues is examined. This information would explore causes of validity, not each type of rating individually. Thus,

Hypothesis 1a: Visual cues are a partial cause of the validity coefficient for the interview.

Hypothesis 1b: Audio cues are a partial cause of the validity coefficient for the interview.

To expand what is learned in H1a and H1b, the relationships of our sample between behavior ratings and job performance ratings are examined in the second section of Part Two. If sufficient variance in the validity coefficient is accounted for by nonverbal cues, it becomes interesting to know if interview ratings and job performance ratings use these cues the same. For that matter, whether both types of ratings use personal reactions and personality

attributions the more when making their ratings is also important. Four questions are posed to query these ideas:

Research Question 1: Do interview ratings and job performance ratings use visual nonverbal cues in the same way?

Research Question 2: Do interview ratings and job performance ratings use audio nonverbal cues in the same way?

Research Question 3: Do interview ratings and job performance ratings use personal reactions inferred from nonverbal cues in the same way?

Research Question 4: Do interview ratings and job performance ratings use personality traits inferred from nonverbal cues in the same way?

CHAPTER 3 METHODS

Participants

First-level managers were interviewed as part of a larger project to validate a structured interview for a national publishing firm. The interview was developed with nine questions to assess seven dimensions of management effectiveness: leadership, concern for others, diversity, customer service, problem solving, professional integrity, and oral communication. The sample of 110 managers includes 88 females and 22 males, all with less than three years of management experience. There are 40 Whites (74%), 17 Blacks (16%), nine Hispanics (8%), and three Asians (3%). Their average age is 32.3 years.

Performance Measures

Immediate supervisors provided supervisory ratings on the same dimensions used in the development of the interview questions. These rating scales are in Appendix A. Performance ratings were made exclusively for the validation study.

Interview Ratings

While validating the interview, videotapes of the actual interviews were sent to Human Resources professionals in the firm. They were instructed to watch the interviews using an interview packet that contained the questions, with space to take notes. The same scales used to assess job performance were used to make interview ratings. Included on the packet were instructions not to rate anyone whom they knew.

Preparation of Experimental Materials

Job performance ratings and interview ratings were gathered in the field, but the remaining variables had to be collected in the laboratory. For this purpose, the sample of videotaped interviews was broken into fifths based on job performance ratings, from high to low. Twenty-two sets of interviews were created with five of the 112 interviews in each set. Each set had one interview taken from each fifth level of performance ratings. Two minutes randomly chosen from the beginning, middle, and the end of each interview was copied onto a separate videotape. After each interview, a one minute blank portion was allowed for interview separation. Thus, each of the 12 videotapes contained five interviews reduced to a two minute portion with a one minute blank spot between each. These 12 new videotapes were then copied to audio tape for vocal analysis. This insured that

both types of nonverbal cues, visual and audio, were assessed on the same portions of the interviews.

Nonverbal Cue Measures

Student raters judged the visual nonverbal cues of the interviewers. Definitions of the variables to be used in this study, physical attractiveness, smiling, gaze, head movement and body orientation, were taken from the literature (DePaulina, 1979; Fernald & Liden, 1988; Kassinis, 1984; Knapp & Hall, 1980). The author ran every morning and personally trained the raters for 30 minutes on the use of seven point scales to make ratings (Appendix B). To boost reliability, five raters were used to rate each manager. Each rated five managers. Thus, 118 students participated in this task.

After the audio portion of the videotape was transferred to audiotape, the manager's voices were analyzed for individual differences on voice characteristics. These audio cues can be measured both subjectively and objectively. Since computer-based methods of voice and speech analysis have been demonstrated to be useful tools to measure paralinguistic variables objectively (Behar, London, & Reid, 1974), audio cues in this study were measured with a computer voice analyzer. The same sections of the 118 interview tapes used to measure visual cues were used to measure the audio cues. Four random samples of

speech, spread throughout the interview, were taken to insure that measurements are reliable. Measurements were about 15 seconds long. The software default is set at six seconds because that is sufficient to sample running speech. However, sample time was increased to 15 seconds to be certain to capture speech that resembles normal conversational changes. Appendix 4 is a sample audio cue measurement file.

Definitions of Audio Cue Variables

Considering that objective measurement of voice characteristics is relatively unknown outside speech and audiology laboratories, definitions of the specific voice characteristics are offered. Five variables are measured and used in this study. The first is pitch. Pitch is the average fundamental frequency over the entire sample. It measures how high or low a voice is. The habitual average pitch level for males is 129 Hz and 125 Hz for females (Moore, 1978). Thus, pitch is corrected for this physiological gender difference by subtracting the difference (4%) from the values for females. Though habitual pitch levels vary according to the individual and the prevailing circumstances (Moore & Matheson, 1988), all participants were interviewed under the same circumstances so variability can be attributed to individual differences.

The second audio variable is pitch variability. It is the standard deviation of the fundamental frequency within each voice sample. In this study, pitch variability is the average of the four measurements' standard deviations. This gives an estimate of the pitch variability, or fundamental frequency range, employed by the speaker.

Speech rate is a variable that reflects the length of the pitch period, or how long the speaker holds a certain level of pitch. When one is speaking, this period changes when a new sound is uttered, such as a new syllable. Thus, each speech rate measurement is the average pitch period (in milliseconds) that can be used as a proxy for speech rate. Most studies use syllables per second, but since there was no script for the interviewers to follow, each person uttered different words making syllables per second very difficult to measure. To check for reliability, ten interviewers' responses to the first question were transcribed exactly and measured with both syllables per second and the speech rate proxy described above. These two measures correlated .88. Thus, the proxy seems sufficient both theoretically and practically.

The fourth variable is pauses. This variable measures the degree of unvoiced time in the sample, averaged over all measurements. It takes into account the time paused, not just the number of pauses.

Finally, amplitude variation gives an indication of the variability of the short-term peak to peak amplitude within the voice sample. The computer measures the volume of each utterance; this variable shows how much the speaker momentarily varies that level of volume in the sample, averaged over all measurements.

Measures of Personal Reactions and Personality Traits

A laboratory study was conducted to gather ratings of personal reactions to the managers and personality attributions of the managers. One half the students were assigned to make personal reactions to the speakers and the other half was assigned the task of making personality attributions of the speakers. To make these ratings, they were exposed to only one channel of information, either the visual or the audio channel. Thus, the four conditions in this experiment are: personal reactions-visual information, personal reactions-audio information, personality assessment-visual information, personality assessment-audio information.

To run this experiment, students either listened to a portion of the interviews recorded on audiotape or viewed silent portions of the videotape and provided ratings on five managers as though they were subordinates. They rated the managers on one of two criteria. One half the raters provided their perceptions of the managers on Fig 3

personality factors (extroversion, conscientiousness, agreeableness, neuroticism, and culture) as though they were subordinates. They were instructed on how to use the 30-item, seven point polar adjectives scales (see Appendix E) given by Goldberg (1988).

The other half of the raters provided their personal reactions to the managers as though they were subordinates. They were trained to use seven point scales for the seven different personal reactions. Each personal reaction was measured with a two-item scale, thus, the entire personal reaction scale contains 14 items (Appendix E). Each rater had to rate five of the 418 managers from the entire range of performance scales as either personal reactions or personality attributions using only one type of cue or channel of information. This required 460 student raters for the four conditions.

Conducted in this manner, the impressions of supervisory traits that possibly affect the behavior of followers were measured from the perspective of subordinates. The validity of observer, or zero acquaintance ratings of the Big 5 personality traits has been established (Meehl, Barrick, & Stogdill, 1994) as has the reliability of other observer ratings (Brockhaus & Lockyer, 1992).

Methodology

Correlational analyses were undertaken to assess the relationship among all variables. As discussed in Chapter 2, an index is used to combine the five echo cues into one variable. Each variable was standardized before combination to avoid the largest mean/variance variable from having undue influence on the index. Again, that index is:

$$\text{Audio Cue Index} = \text{Speech Rate} + \text{Voice Breaks} + \text{Range of Pitch} + \text{Amplitude Variability} + \text{Pitch.}$$

Similarly, the five visual cues, the seven personal reaction variables, and the four five personality scales were respectively combined into index variables. Because they all use the same metric, individual variables were not standardized before combination. The visual cues are an additive scale, personal reactions are an additive scale, and personality attributions are four item scales scored in the positive direction and summed.

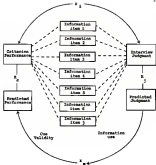
Part One of this study tests the mediating effects of personal reactions and personality attributions on the relationship between anecdotal cues, interview judgments and ratings of performance. If this relationship persists when the variance attributed to the Big 5 and personal reaction variables is partialled out, it will be indication of their mediating effects. Regression analysis is used here following Baron and Kenny (1986).

A different analysis tool is used in Part Two of the study. A Bronfenbrenner lens model has been suggested as a useful alternative research design for selection research (Meeus, 1991). By obtaining the appropriate contextual predictors, the lens model can help to achieve better validity in the inference process of the interview (Hollard et al., 1998). What the lens model does is determine the degree of agreement between the two sides of the model, given the data in the center of the model (Figure 2-4).

First, agreement on the use of these contextual cues to make interview judgments and job performance ratings can be examined by using criterion performance with contextual cue correlations as one side of the model, and correlations between interview judgments and contextual cues as the other side of the model. That is, the cues will be regressed on both dependent variables, saving the predictions from the regression as a new variable. The predictions from each regression equation can then be correlated to estimate common usage of the information items. This is analogous to a corrected validity coefficient (Quinn, 1998).

These analyses move toward understanding the effect of contextual cues on interview validity. Another way to look at this problem is through partial correlations and corresponding variance reduction rates (Kline & Spector,

1990). This method is used to examine validity loss when the effects of the covar are controlled.



a = observer/observer
 1 validity coefficient

b = matching index

c = Multiple correlation for
 predictability of observer

d = Multiple correlation for
 predictability of judgments

FIGURE 3-1
 MODIFIED BOURDIEU'S LENS MODEL

CHAPTER 4 RESULTS

Measurement Reliability

Considering the data come from different sources, including ratings, reliability must be dealt with first to determine the stability of the different measurements. Once reliability is established, relationships can be examined with confidence.

Audio-Recording Copy

Table 4-1 shows the correlation matrix for the audio recording copy. Though pausing is highly correlated with amplitude variability ($r = .84$, $p < .001$), these variables do not measure the same construct. Amplitude variability measures the short-term variation in loudness a speaker uses while pausing reflects the average amount of time the speaker made no utterances. Likewise, the correlation between speech rate and amplitude variability ($r = -.65$, $p < .001$) shows a true relationship that is unclouded by artifacts. Reliability for these variables is calculated as the average correlation of the four measurements taken,

TABLE 4-2
CORRELATIONS AND RELIABILITY OF BEGG MONITORING DATA

	1	2	3	4	5	6
1. Pitch	1.00					
2. Rumbling	.17	1.00				
3. Pitch variability	-.60	.20	1.00			
4. Amplitude variability	-.80	.44	.60	1.00		
5. Speech rate	-.28	-.36	.24	-.08	1.00	
6. Audio Cue Index	-.48	-.80	.26	-.70	.20	1.00
Mean	108.84	91.32	38.86	11.79	4.42	
SD	28.24	8.45	13.12	3.30	3.48	

n = 100; Reliability of four measurements on diagonal; Average correlations corrected by Spearman-Brown formula.

corrected by the Spearman-Brown formula. Reliability ranges from .62 for pitch variability to .82 for pitch. Pitch variability can reasonably be expected to be lower since a speaker can use variations in pitch across measurements much easier than varying the other vocal variables. Important for this study, is the reliability of the audio cue index (.87). It is sufficiently high to use as an index of vocal discrimination.

Visual-Verbal Cues

Correlations among the five visual-verbal cues are shown in Table 4-2. Here, all variables correlate fairly high, ranging from .32 to .87, though this is not as high as one might think they measure the same constructs. Ratna was thoroughly trained in this aspect of the study to tally each variable separately. Reliability here is calculated as the intraclass reliability of five raters corrected by the Spearman-Brown formula. Again, reliability is good, ranging from .71 to .98, and is very high as the index (.89).² Thus, a visual cue index also can be used to test the model.

TABLE 4-2

CORRELATIONS AND RELIABILITY OF VARIOUS PORTFOLIO CRIES

	1	2	3	4	5	6
1. Scale	(.87)					
2. Study satisfaction	.47	(.96)				
3. Cries	.38	.37	(.80)			
4. Physical attractiveness	.44	.36	.31	(.97)		
5. Social desirability	.47	.37	.41	.42	(.96)	
6. Visual Cries Index	.71	.46	.61	.43	.75	(.83)

Reliability as diagonal. Correlations calculated at five dates indicated by Appendix-Scores formula.

Personality Judgments

Personality of the interviewees was assessed by trained student raters in a controlled laboratory experiment. Thus, the types of reliability need to be assessed scale and rater. First, scale reliability was computed by calculating coefficient alphas for each of the Big Five personality factors (Table 4-3). Each factor was assessed with a four-item scale. Reliability estimates range from .58 to .78 in the visual cue condition and from .45 to .78 in the audio cue condition. Considering the raters had only one channel of information from which to make their personality ratings, these somewhat low reliability evaluations are expected. The lowest reliability is for agreeableness, the factor that the self-regulation literature has shown to be the most difficult for raters to agree upon (e.g., Forbush & Liebow, 1991). The other two organizationally relevant factors, extraversion and conscientiousness, are sufficiently high.

Rater reliabilities for the personality factors are similar to those above, ranging from .48 to .78 in the visual cue condition and from .37 to .68 in the audio cue condition (Table 4-4). These are calculated using the

TABLE 4-3
BIG 5 PERSONALITY SCALE RELIABILITY

	Condition	
	Visual Cues Only	Audio Cues Only
Extraversion	.79	.79
Conscientiousness	.45	.45
Agreeableness	.59	.48
Neuroticism	.38	.44
Culture	.43	.45

Coefficient Alpha: 5 items per scale $n = 550$

intraclass reliability of the five scales, corrected by the Spearman-Brown formula. Correlations among the audio attributions of the features are given below the diagonal in Table 4-3 and among the visual attributions of the personality features above the diagonal. The correlations between agreeableness and the other features, along with the adjusted reliability estimate for agreeableness, support the contention made above that this construct is difficult to agree upon from an observer point of view. Interrater agreement is high for extraversion (.79 in the visual

TABLE 9-4
CORRELATIONS AMONG HETEROGENEITY, VOLUMES, AND INTERACTION RELIABILITY

	1	2	3	4	5	Grand Mean
1. Aggravation	—	.59	.45	-.14	.32	.46
2. Conscientiousness	.32	—	.48	-.16	.27	.40
3. Culture	.34	.55	—	.46	.31	.49
4. Reliability	-.13	.32	.49	—	-.25	.29
5. Interaction Reliability	.34	.47	.21	-.13	—	.50
Alpha Reliability	.37	.45	.45	.40	.40	

$n = 134$. Correlations above diagonal are from the stated conditions; below the diagonal are from the radio condition. Reliability estimates are interaction derivatives ($b = b$ values) computed by the Spearman-Brown formula.

condition and $r=.88$ in the audio condition) and fairly high test retest reliability ($r=.98$ in the visual condition and $r=.95$ in the audio condition).

Internal Reliability

Both types of reliability are important with regard to the measurement of the affective, personal reactions toward interviewers. Each of the seven variables was measured with a two-item scale. Internal consistency ranges from $.48$ to

$.91$ in the visual cue condition and ranges from $.48$ to $.94$ in the audio cue condition (Table 4-5). Internal consistency reliability is calculated using the correlation between the two items measuring each construct and correcting it using the Spearman-Brown formula.

Correlations between items in the audio condition are in the first column with adjusted reliability estimates in the second column. Correlations between items in the visual condition are in the third column with corrected reliability estimates in the last column.

Reliability of the index resulting from combining these two item scales is shown in Table 4-6. This estimate is the intraclass reliability of the 14 item scale adjusted by Spearman-Brown formula for five raters.

TABLE 4-6
PERSONAL REACTIONS INTER-ITEM CORRELATIONS AND
RELIABILITY ESTIMATES

	Audio condition		Visual condition	
	Two item r	Reliability	Two item r	Reliability
1. Competence	.92	.88	.84	.79
2. Compliance	.87	.83	.87	.80
3. Dominance	.88	.85	.88	.80
4. Helping	.81	.78	.76	.69
5. Liking	.81	.85	.84	.79
6. Trust	.78	.88	.77	.83
7. Receptive	.85	.88	.78	.80

Internal consistency reliability adjusted by Spearman Brown formula. All correlations significant at $p < .05$.

TABLE 4-6
PERSONAL REACTIONS SCALE RELIABILITY

	Visual cues only	Conferences Audio cues only
Personal Reactions Index	.83	.98
Intraclass reliability adjusted by Spearman-Brown formula for 3 raters; 18 items per scale; n = 129		

The intraclass correlation for the three raters of each interviewee, corrected by the Spearman-Brown formula, yielded reliability estimates from .48 for Trustability to .79 for Competence in the visual cue condition. In the audio cue condition, the reliability estimates range from .48 for Helpfulness to .74 for Competence (Table 4-7).

When the personal reactions are combined in an index, very high reliability is observed ($r = .83$ for the visual condition and $r = .98$ for the audio condition). Therefore, an index can be used to represent overall personal reactions to the managers from the subordinate's point of view.

Relationships between Cues and Interview Judgments

The first set of hypotheses predict a positive relationship between visual cues and interview ratings, and

TABLE 1-7
INTRACLAS CORRELATIONS FOR PERSONAL SECTION VARIABLES

	Condition	
	Visual Cues Only	Audio Cues Only
Competence	.78	.74
Compliance	.71	.84
Domineer	.78	.73
Helpfulness	.71	.69
Likability	.70	.65
Personableness	.75	.71
Stability	.66	.63
Personal Section Index	.80	.73

Intraclass reliability adjusted by Spearman-Brown formula
for 2 raters.

visual cues and job performance ratings. For visual cues and interview ratings, the correlation is .31 ($p < .001$) and for visual cues and job performance ratings, the correlation is .24 ($p = .018$) (Table 1-8). These relationships show that visual cues are taken into account when determining interview ratings and job performance ratings.

The next hypothesis predicts that there would be positive relationships between audio cues and interview ratings and audio cues and job performance ratings. For

audio cues and interview ratings, the correlation is $.32$ ($p < .05$) and for audio cues and job performance ratings, the correlation is $.30$ ($p < .05$) (Tables 4-8). These relationships reveal the same information as for visual cues: radio cues are taken into account when determining interview ratings and job performance ratings.

Hypotheses 3a and 3b predicted a positive relationship between personal reactions and visual cues and audio cues respectively. These two were supported, robustly for visual cues ($r = .59$, $p < .05$) and also for audio cues ($r = .30$, $p < .05$) (Table 4-8). Considering the raters were suggested to only use channel of information to make their ratings, these findings show that people react in a personal way to the level of specific contextual cue usage of others.

Similarly, positive relationships between the cues and personality attributions were expected. For visual cues, all three organizationally relevant Big 5 traits are significantly related (extraversion: $r = .46$, $p < .05$; conscientiousness: $r = .34$, $p < .05$; agreeableness: $r = .15$, $p = .081$). For radio cues, however, only extraversion was significant ($r = .30$, $p < .05$). Conscientiousness had a correlation of $.13$ (ns) and agreeableness a correlation of

TABLE 4-6
CORRELATIONS BY CONDITION

A) Audio Condition	Audio Cues	Interview Ratings	Performance Ratings
Audio Cues	---	.32 ^a	.29 ^a
Personal Readiness	.29 ^a	.41 ^a	.28 ^a
Agreeableness	-.01	= .00	= .00
Conscientiousness	.32	.43 ^a	.28
Extroversion	-.31 ^a	-.34 ^a	.24 ^a
B) Visual Condition	Visual Cues	Interview Ratings	Performance Ratings
Visual Cues	---	.21 ^a	.14 ^a
Personal Readiness	.09 ^a	.26 ^a	.28
Agreeableness	.18 ^a	.01	.27
Conscientiousness	.24 ^a	.33 ^a	.25
Extroversion	-.09 ^a	-.05	.27

n = 138

^a p < .05; ^b p < .01; ^c p < .001

-.45 (see Table 4-6). Thus, personality traits can be more easily attributed with the use of visual cues, except the trait of extroversion, which can be attributed by using either channel of information.

Mediator Model Testing: Procedure

The relationships established above can now be tested with the Mediatorial model given in Figure 2-1. Following Baron and Kenny (1986), this mediating model is tested in three steps. First, there must be a significant relationship between the independent variable and the dependent variable. Second, there must be a significant relationship between the mediator and the independent variable. Finally, when the combined effects of the mediator and the dependent variable are examined in a linear regression equation, the mediator must still be statistically significant and the independent variable must have a lower relationship with the dependent variable than when examined individually. Perfect mediation exists when the relationship between the independent and the dependent variable is driven downward to zero when the mediator is introduced into the equation in step 3.

Hypothesis set 3 predicts the mediating effects seen in Figure 2-1 on the relationship between visual cues and interview ratings. Table 4-5 shows that when the combined effects of personal reactions as the mediator and visual

even as the independent variable are examined on interview ratings (Bla₂), the mediator is significant and the independent variable is driven toward zero ($\beta_{22} = .02$, $p < .05$; $\beta_{21} = .08$, ns). Personal reactions strongly mediate the relationship between visual cues and interview ratings, given the nonsignificant relationship of the visual cues on the dependent variable when the mediator is added to the equation.

Hypothesis 3a was not supported (Table 4-10). The mediated explanation was not significant in the combined effects regression equation ($\beta_{22} = .01$, ns; $\beta_{21} = -.08$, $p < .05$). H3b predicted that conscientiousness would mediate the visual cues - interview rating relationship, and it was supported ($\beta_{222} = .02$, $p < .05$; $\beta_{21} = -.04$, ns). Finally, H3c was not supported. Spontaneous attributions made from the visual channel do not mediate the relationship between visual cues and interview ratings ($\beta_{222} = -.03$, ns; $\beta_{21} = .02$, $p < .05$).

The next set of hypotheses test the model from the audio cues side (see Table 4-11). First, personal reactions to the speaker derived from the audio channel mediate the

TABLE 4-8
 MEDIATION RESULTS FOR VISUAL CUES AND INTERVIEW SETTINGS
 STANDARDIZED REGRESSION COEFFICIENTS

Dependent Variable	Mediator		Total Effects
	ES	EC	
IR: Individual effects	---	.22 ⁺	
VC: Individual effects	.62 ⁺	---	
IR: Combined effects	.21 ⁺	.08	
	ES	EC	
IR: Individual effects	---	.22 ⁺	
VC: Individual effects	.62 ⁺	---	
IR: Combined effects	.40	.22 ⁺	
	CON	EC	
IR: Individual effects	---	.22 ⁺	
VC: Individual effects	.24 ⁺	---	
IR: Combined effects	.28 ⁺	.14	
	AG	EC	
IR: Individual effects	---	.22 ⁺	
VC: Individual effects	.15	---	
IR: Combined effects	-.03	.22 ⁺	

*p < .05; VC = Visual Cues; EC = Audio Cues; IR = Technical Reception; ES = Interview Setting; EC = Extroversion; CON = Conscientiousness; AG = Agreeableness.

media cues = interview rating relationship to conduct the H_{2a} = .34, $p < .05$; H_{2b} = .35, $p < .05$). Thus, the way one deals effectively toward a manager, given only media cues information about the manager, partially explains the relationship between media cues and interview ratings.

Similarly, extraversion mediates this relationship (H_{2c} = .34, $p < .05$; H_{2d} = .34, $p < .05$). The degree to which a manager is attributed the trait extraversion is a causal link between media cues and interview ratings.

Conscientiousness also was found to mediate the media cues and interview rating relationship (H_{2e} = .33, $p < .05$; H_{2f} = .35, $p < .05$). This is the one instance in this study, however, where the individual effects of the mediator are not significantly related to the cues, but still mediate the relationship in the combined effects model.

Testing for agreeableness as a mediator did not pass the conditions set out in step 2, i.e., the relationship between agreeableness and media cues was not significant. Were though, agreeableness was not significant in the combined effects model, and thus, cannot be a mediator (H_{2g} = -.04, ns, H_{2h} = .33, $p < .05$).

To this point, the analyses discussed have tested the mediating effects on both types of cues and interview ratings. These mediator analyses are repeated with job performance ratings as the dependent variable. First,

TABLE 4-12		
REGRESSION RESULTS FOR STANDARDIZED	NEED CORRELATION REGRESSION	AND INTEREST RATING COEFFICIENTS

Hypothesis set H7 examines the mediating effects on the visual cue - job performance relationship. Table 4-11 provides evidence that none of the hypotheses are supported involving the visual cue - job performance rating relationship.

For the audio cue - job performance hypotheses, only H8a held true (Table 4-12). The relationship between job performance ratings and audio cues can be partially explained by personal reactions ($\beta_{21} = .23$, $p < .05$; $\beta_{22} = .14$, ns). None of the other hypotheses were supported. This completes the analyses from Part One of the study.

Research Model Revision: Part Two

In the first section of Part Two of the study, the effects of nonverbal cues on the interview validity and audio cues comparatively are partially the underlying causes of the validity coefficient for the interview ratings and job performance. Both hypotheses are supported to an extent, though audio cues explain more of the variance in the validity coefficient in this study (Table 4-13). Though the validity coefficient only drops .63 from the zero order to first order correlation, this corresponds to an 11% drop in variance accounted for by visual cues. Moreover, when the effects of audio cues are partialled out of the

TABLE 4-11
 REGRESSION RESULTS FOR VISUAL CUES AND JOB PERFORMANCE
 STANDARDIZED REGRESSION COEFFICIENTS

Dep. Variable	Mediator	Indep. Variable
	EX	VC
PERF: Individual effects	—	.14
VC: Individual effects	.89*	—
PERF: Combined effects	.41	.14
	EX	VC
PERF: Individual effects	—	.14
VC: Individual effects	.89*	—
PERF: Combined effects	.41	.13
	CON	VC
PERF: Individual effects	—	.14
VC: Individual effects	.74*	—
PERF: Combined effects	.18	.13
	AD	VC
PERF: Individual effects	—	.14
VC: Individual effects	.13	—
PERF: Combined effects	-.18	.13

* p < .05; VC = Visual Cues; EX = Extroversion;
 PERF = Job Performance Rating; EX = Extroversion,
 CON = Conscientiousness; AD = Agreeableness.

TABLE 4-12
 REGRESSION RESULTS FOR PREGO CUES AND JOB PERFORMANCE
 STANDARDIZED REGRESSION COEFFICIENTS

Dep. Variable	Mediator	Index Variable
	EX	AC
PERF: Individual effects		.20*
AC: Individual effects	.20*	---
PERF: Combined effects	.21*	.14
	EX	AC
PERF: Individual effects	---	.20*
AC: Individual effects	.21*	---
PERF: Combined effects	.11	.14
	CON	AC
PERF: Individual effects	---	.20*
AC: Individual effects	.08	---
PERF: Combined effects	.28	.20*
	AG	AC
PERF: Individual effects	---	.20*
AC: Individual effects	-.09	---
PERF: Combined effects	-.09	.20*

* $p < .05$; AC = Action Cues; EX = External Cues;

PERF = Job Performance Ratings; EX = Extraversion;

CON = Conscientiousness; AG = Agreeableness

TABLE 4-13
ZERO AND FIRST ORDER CORRELATIONS BETWEEN INTERVIEW RATINGS
AND PERFORMANCE RATINGS

	Performance Ratings		
	r	R ²	Var. Varian- reduction 2018
Interview Ratings			
Zero Order	.35	.12	
First Order			
Visual cues controlled	.32	.10	15%
Audio cues controlled	.30	.09	17%
Both cues controlled	.24	.06	36%

Interview rating - job performance rating relationship, 37% of the variance is reduced. While both types of cues are partial causes of the relationship between interview ratings and job performance ratings, audio cues account for more than one-quarter variance reduction when partialled out. Finally, controlling for both types of cues reduces the variance explained by 12%.

In the second section of Part Two, a Bollen-Kahn model is used to assess the degree to which interview ratings and job performance ratings similarly are different.

constructs when making their ratings. To examine Question 1, the individual visual cues were regressed on both job performance ratings and interview judgments. Predictions made by this regression model are saved as variables and correlated to give the "matching index." The matching index is understood as the degree to which both sides of the model similarly use the information items. Figure 4-1 shows the results of this analysis. The matching index, or the corrected validity coefficient (Nelson, 1990) is $r = .38$. This shows the nucleus job relevance of the interview judgments given only visual cues. It is interesting that the multiple correlation for the predictability of the criterion given only these visual cues ($R = .37$) is close to the validity coefficient ($r = .38$). A similar result is found on the interview ratings side of the model ($R = .37$).

Figure 4-2 has the results for Question 2 regarding audio cues. The matching index is much smaller here, $r = .29$, showing significant similarity of cue usage, but not as much as the visual cues. In fact, this matching index is not even as high as the validity coefficient. One could argue that the combined usage of audio cues by both types of raters is suppressing the validity coefficient. However, similar to visual cues, the multiple correlation for the predictability of the criterion given audio cues ($R = .27$) is very close to the validity coefficient ($r = .30$) as is

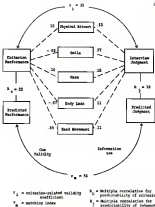
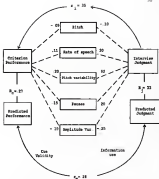


FIGURE 4-1
VISUAL INFORMATION USE

the multiple correlation for the predictability of the interview judgments ($R = .50$).

Question 3 is examined in Figure 4-3. When the personality attributions made from both channels individually are combined to reflect overall personality attribution, the matching index is very high ($r = .61$). This suggests that interview raters and job performance raters almost equally use personality attributions when making their ratings. The multiple correlations indicate good predictability of both the criterion ($R = .50$) and interview judgments ($R = .54$) using personality attributions.

The final question in Part Two examines the use of personal reactions by both types of raters. Figure 4-4 shows a similarly high matching index as for personality attributions ($r = .75$). Again, this indicates equal usage of personal reactions when making different types of ratings. It also shows higher validity for the personal reactions to contextual cues than the criterion-related validity coefficient from the interview. Using personal reactions to contextual cues, one can predict job performance ($R = .54$) and interview judgments ($R = .48$) very well. The personal reaction variables were combined from both channels as described above as personality attributions.



R = criterion-related validity
 1. coefficient

R = matching index
 2.

R = Multiple correlation for
 predictability of criterion

R = Multiple correlation for
 predictability of judgments

FIGURE 4-2
 ANOVA GENERAL CASE

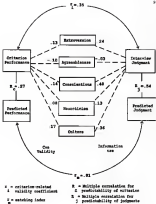


FIGURE 4-3
PERSONALITY JUDGMENTS FROM
BROWARD COBE



FIGURE 4-4
PERSONAL REACTIONS FROM
UNIVERSAL CUES

CHAPTER 5 DISCUSSION

This study provides evidence that there is a meaningful relationship between both visual and audio nonverbal cues, interview favorability, and job performance ratings. These relationships are shown to be greatly mediated by personal reactions to the speaker, and to a lesser extent, by personality attributes of the speaker.

Interview Favorability

In an interview, there is little time to put together all information at hand to derive subsequent ratings of favorability. Thus, raters are left to search for ways to assess the rater using the behavioral information given in the interview answers, but also other cues from both the visual and audio channels.

The data examined in this study say that subordinates react in a personal manner to the nonverbal cues of managers. When subordinates are exposed to only the visual channel of information from their manager, their personal reactions to what they see act as the mechanism through which the cues cause interview favorability. In other words, the correlation between visual cues and interview

ratings may not be attributable to stereotyping error if the affective orientation that listeners have toward the speaker indicates how one would react on the job. In this study, the listener was trained as the subordinate to the speaker, who was the manager. These results suggest that favorable ratings in the interview that are associated with visual cues would translate to the job where the subordinate would react more positively to the manager, given higher levels of visual cues.

Conscientiousness also was found to mediate the relationship between visual cues and interview ratings. The correlation between visual cues and interview ratings is explained when a manager is deemed responsible and dependable by a listener. This has even greater ramifications for firms since conscientiousness is a job relevant construct (e.g., Barrick & Mount, 1991; Wough et al., 1994).

When listeners are exposed to only the audio channel of information of the speaker, their personal reactions partially mediate the relationship between audio cues and interview ratings. Though not as direct an effect as found with the visual cues, the way that one reacts to what is heard, without seeing the speaker, is a mechanism for this linkage. This suggests that the way a speaker's voice sounds acts in a similar manner to how the speaker looks.

If this represents stereotyping, it has organizational relevance for effective performance. Similar to the visual cues, if a subordinate finds the manager's voice attractive, that subordinate perceives a more positive affective manner to the manager. Stated another way, subordinates react systematically to audio cues, making it reasonable to believe that people who possess optimum cues will be more effective as a manager.

Extroversion also was shown to be a causal link between audio cues and interview ratings. If extroversion is attributed to the manager, that manager's audio cues reflect it and higher interview ratings result. It can be argued that in the interview, an extroverted person is at a significant advantage to an introverted person because impression management is more deftly used when one is an extrovert. From this study, it also can be argued that since extroversion is attributed mainly from audio cues, cues that are difficult to change, these attributions are indicating an inherent trait, not impression management tactics.

Job Performance Ratings

This work also shows a significant correlation between visual and audio conversational cues and job performance ratings. With interview ratings, one explanation was stereotyping, gives an interviewee's limited information- impression

Management is also an explanation for the relationship between managerial cues and interview ratings. These explanations cannot hold for job performance ratings. Supervisors have access to much more information about the rates making the issues of stereotyping from limited information and the use of rating impression management in this rating setting moot. It is a more complex task to explain managerial cues correlating with job performance.

Results from this study show that personal reactions from audio cues is a mechanism for the audio cue/job performance rating link. The relationship between higher manager ratings of job performance and their audio cues causes subordinates to help them more, trust them more, comply with them more, and have overall higher affective personal reactions to the manager. Subordinates respond to certain audio cues more positively than others. A high pitched voice, one that uses little variation in pitch, hesitates infrequently, does not vary the amplitude, and is slow paced, is not associated with effectiveness. But since these cues cause subordinates to be more supportive of their managers, job performance of the manager increases. Essentially, this raises the possibility that these cues may belong in the performance domain.

Interview Validity

In this study, a significant amount of variance in the validity coefficient was explained by nonverbal cues, especially audio cues. When the variance from both types of cues are partitioned out together, half the variance explained in the validity coefficient is lost. That is, nonverbal cues explain half the variance in the interview validity. This suggests the cues belong in the performance domain. If concerns associated with interview settings and nonverbal cues can be allayed, making this suggestion might be more palatable. After all, if nonverbal cues belong in the job performance criterion domain, what could ultimately be suggested is to use nonverbal cues in organizational decisions.

The analysis from the Druskwitz lens model provides different information. The two sides of the model showed agreement on the usage of nonverbal cues, personal reactions, and personality attributions. To the extent of the varying matching indices from the Druskwitz lens model analysis, there is evidence that these different constructs are utilized when assessing the performance of others. This finding moves forward offering a partial rebuttal to the notion that nonverbal cues are error in interview judgments. If the cues are used similarly in job performance rating situations, where the error is not attributed to the sources

suggested in interviews, there is further support for the notion that the cues indicate underlying traits that are important on the job.

Conclusion

The effects of Manager's perceived cues on their job performance ratings and interview ratings may be explained in a couple of ways. Perhaps there are shared biases from supervisors to interview rates. There would be things that society values or holds biases toward. An example concerns decisions about political candidates. Research has shown these decisions often are made on the basis of appearance or a "gut-level feeling" rather than content (Hovavine, 1992).

Another interpretation is that the cues are behavioral manifestations of underlying traits. The results from this study lean toward this conclusion. Interviews may have stereotyping and impression management, but job performance ratings should not. The degree of similar usage of the cues shows they are revealing something other than stereotyping and impression management. Job performance ratings have only one explanation from this study: personal reactions from visible cues. There is room for more research here. Limitations to this study can be overcome with replication and expansion of the research model used in this study. It could contain other mechanisms through which the

relationship between nonverbal cues, interview favorability, and job performance ratings can be examined.

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APPENDIX A

The following six pages contain the six behaviorally anchored scales used by both the interview raters and the supervisors.

LEADERSHIP

seeking opportunities for leadership; directing and guiding others toward the accomplishment of tasks by motivating and increasing their performance/behavior; persuading others to accept one's ideas and exhibiting confidence in those ideas; sharing initiative; taking charge.

Description of exhibited behavior

HIGH	7	<ul style="list-style-type: none"> ● Seeks or volunteers for leadership roles in groups. ● Provides accurate and constructive feedback to others resulting in improved performance.
	6	<ul style="list-style-type: none"> ● Consistently accomplishes goals through others. ● Confidently and effectively persuades others to accept one's views and ideas.
	5	<ul style="list-style-type: none"> ● Takes on leadership roles and responsibilities when offered. ● Attempts to motivate others by providing feedback and encouragement.
MODERATE	4	<ul style="list-style-type: none"> ● May recognize, but not always takes advantage of, opportunities to accomplish tasks through others.
	3	<ul style="list-style-type: none"> ● Expresses one's ideas and views to others and attempts to persuade them to accept the same opinions.
	2	<ul style="list-style-type: none"> ● Avoids or declines opportunities for leadership. ● Does not motivate or encourage others to exert more effort toward task accomplishment, or give feedback to others about performance.
LOW	1	<ul style="list-style-type: none"> ● Does not utilize opportunities to accomplish goals through others. ● Does not try to express one's views and opinions to others.

EFFECTIVE PROBLEM SOLVING

Adopting a methodical and systematic approach for solving all aspects of a problem; giving specific attention to clearly understanding objectives and developing plans to meet them; working hard to meet deadlines; persisting to overcome obstacles; striving for excellence in work products; reacting to crises calmly, deliberately, and constructively; showing self-control and refraining from emotional outbursts.

Development of Problem Solving

HIGH	7	<ul style="list-style-type: none"> • Sets priorities, understands objectives, and forms flexible plans to accomplish assignments. • Uses all the time available to search for relevant information and form alternative solutions. • Works as hard as necessary to complete even difficult and challenging assignments on time.
		<ul style="list-style-type: none"> • Responds calmly and deliberately to stressful situations by focusing constructively on the task at hand.
MIDDLE	4	<ul style="list-style-type: none"> • Plans ahead to avoid major and minor obstacles and difficulties as they arise. • Takes advantage of readily available information to develop a solution. • Attempts to meet deadlines with reasonable concern for quality, but may become side-tracked by obstacles or delays.
		<ul style="list-style-type: none"> • Shows signs of stress in critical situations, but avoids strong emotional outbursts.
LOW	1	<ul style="list-style-type: none"> • Makes hasty, impulsive decisions without setting priorities, planning ahead, or understanding objectives. • Overlooks key information and misses important details. • Frustrated, spends deadlines, or asks for help unnecessarily. • Loses composure and self-control in stressful situations.

PROFESSIONAL INTEGRITY

Acknowledging one's limitations and mistakes; complying with company policies and rules even when personally inconvenient; meeting commitments, obligations, and promises to others; treating subordinates and coworkers fairly; accepting responsibility for errors without making excuses or becoming defensive

Investigation of exhibited behavior

	<ul style="list-style-type: none"> ● Immediately acknowledges own mistakes and acts immediately to correct them and minimize their impact on others.
7	<ul style="list-style-type: none"> ● Immediately follows both the letter and the spirit of company policies and rules.
EXCEL	<ul style="list-style-type: none"> ● Meets all commitments, obligations, and promises to others.
	<ul style="list-style-type: none"> ● Vigorously defends one's principled position despite strong objections from others.
	<ul style="list-style-type: none"> ● Acknowledges own mistakes with minimal defensiveness.
5	<ul style="list-style-type: none"> ● Tries to follow at least the letter of company policies and rules.
MINIMAL	<ul style="list-style-type: none"> ● Meets most commitments, obligations, and promises to others, but sometimes forgets.
	<ul style="list-style-type: none"> ● Expresses one's principled position, but may back down to avoid confrontation when others disagree.
	<ul style="list-style-type: none"> ● Rarely acknowledges to criticism and shares responsibility for mistakes.
3	<ul style="list-style-type: none"> ● Follows company policies and rules only when convenient.
LOW	<ul style="list-style-type: none"> ● Deliberately ignores commitments, obligations, or promises made to others when no longer in one's best interests.
	<ul style="list-style-type: none"> ● Does not express disagreement when others advocate a position different from one's principled position.

CONCERN FOR OTHERS

Showing concern for others' welfare, showing sensitivity and tact; appreciating and respecting differences between others; resolving conflict constructively; seeking for ideas and opinions, listening carefully, and accepting them; sharing concerns with others; appreciating and designing compromises that serve larger organizational interests

Description of exhibited behavior	
7	● looks for opportunities to help others and willingly sacrifices personal convenience to help
	● tries hard to empathize with others and understand their feelings and opinions
	● develops compromise solutions and ways to resolve conflicts or disagreements with others
6	● asks others for ideas and accepts them when appropriate
	● helps others willingly when asked
	● listens when others approach to discuss their feelings or personal concerns
5	● accepts compromise solutions and offers by others to resolve conflict
	● listens to others' ideas when offered
	● shows reluctance and hesitation when asked to sacrifice personal convenience to help others
4	● shows little concern or concern for how one's actions are likely to affect others
	● expresses selfish inclinations by refusing to compromise even when necessary to proceed with the task
	● ignores or rejects others' ideas

CUSTOMER SERVICE

Taking steps to learn about customers' internal and external needs and preferences provides work effort in developing products and deliver services that will satisfy customers' needs and preferences, going out of the way to satisfy customers' special requests, treating customers with respect, tact, and professional courtesy at all times.

Description of exhibited behavior	
1	<ul style="list-style-type: none"> • Takes initiative to approach customers, ask questions, and fully understand their needs.
	<ul style="list-style-type: none"> • Focuses specifically on customer satisfaction without sacrificing technical quality.
	<ul style="list-style-type: none"> • Tailors products and services as much as possible to the unique needs of different customers.
2	<ul style="list-style-type: none"> • Looks for opportunities to give customers the best service possible and satisfy special requests, even when potentially inconvenient.
	<ul style="list-style-type: none"> • Listens when customers approach to explain their needs or request services.
3	<ul style="list-style-type: none"> • Focuses on technical quality, but also keeps customer satisfaction in mind.
	<ul style="list-style-type: none"> • Develops products and services to meet the needs of most customers.
4	<ul style="list-style-type: none"> • Tries to meet customers' special requests even if inconvenient.
	<ul style="list-style-type: none"> • Fails to listen when customers approach to explain their needs, but frequently ignores them.
5	<ul style="list-style-type: none"> • Focuses only on technical quality and ignores customer satisfaction.
	<ul style="list-style-type: none"> • Provides generic products and services without considering the unique needs of different customers.
6	<ul style="list-style-type: none"> • Refuses to try to satisfy customers' special requests if potentially inconvenient.

PROMOTING DIVERSITY

Understanding and accepting people with diverse backgrounds and cultural orientations, supporting company goals with respect to employee diversity, showing that the individual is consistent with people from diverse backgrounds and cultures.

Description of exhibited behavior	
7	<ul style="list-style-type: none"> Actively tries to learn about and accommodate the different perspectives of people with diverse ethnic or cultural backgrounds.
6	<ul style="list-style-type: none"> Enthusiastically endorses employee company goals to promote diversity.
5	<ul style="list-style-type: none"> Explores advantages of employee diversity to others and encourages others to promote diversity.
4	<ul style="list-style-type: none"> Enthusiastically endorses people with diverse ethnic or cultural backgrounds.
3	<ul style="list-style-type: none"> Adjusts to differences in perspective when dealing with people with diverse ethnic or cultural backgrounds.
2	<ul style="list-style-type: none"> Complies with company goals to promote diversity.
1	<ul style="list-style-type: none"> Expects others who show resistance that it is the company's policy to promote diversity.
0	<ul style="list-style-type: none"> Accepts people regardless of their ethnic or cultural background.
0	<ul style="list-style-type: none"> Ignores potential differences in perspective when dealing with people with diverse ethnic or cultural backgrounds.
0	<ul style="list-style-type: none"> Shows reluctance to promote diversity.
0	<ul style="list-style-type: none"> Agrees with others when they express reluctance to promote diversity.
0	<ul style="list-style-type: none"> Assists or adjusts people with diverse ethnic or cultural backgrounds.

APPENDIX B
VISUAL IMPAIRMENT USE ACTING POLE
BACKGROUND INFORMATION ABOUT YOU

AGE: _____

SEX: _____

FULL-TIME WORK EXPERIENCE

- ☐ none
- ☐ up to six months
- ☐ 6-12 months
- ☐ 1-2 years
- ☐ 2-5 years
- ☐ more than 5 years

MANAGEMENT EXPERIENCE

- ☐ none
- ☐ up to six months
- ☐ 6-12 months
- ☐ 1-2 years
- ☐ 2-5 years
- ☐ more than 5 years

have you ever been employed as a user

- ☐ no
- ☐ yes, 1 to 2 times
- ☐ yes, 3 to 5 times
- ☐ yes, more than 5 times

G.P.A. _____

1. How much did this person smile in the interview?

1	2	3	4	5	6	7
never smiled		smiled a little				smiled a lot

2. The degree of appeal based on physical attractiveness of this person is:

1	2	3	4	5	6	7
very unattractive		average attractiveness				very attractive

3. How much did this person move his/her hands while talking?

1	2	3	4	5	6	7
never moved hands			often held the chin			constantly moved hands

4. The degree that this person looked directly at the interviewer while talking is:

1	2	3	4	5	6	7
never looked at interviewer			half the time			constantly looked at interviewer

5. How did this person position his/her body in the interview?

1	2	3	4	5	6	7
leaved very far from interviewer			not leaning either way			leaved toward the interviewer

APPENDIX C
RUMBLE COW SAMPLE #116

Sampled Date: 05C 06MAR
Signal Level: 12475
Sampling Rate: 50000
Time Range: 0-00:00 sec
 0-00:00 sec

Average Spectral Frequency	F ₀	=	150.333	Hz
Average Pitch Period	T ₀	=	7.275	ms
Highest Spectral Frequency	F ₀₁	=	1020.760	Hz
Lowest Spectral Frequency	F _{0n}	=	64.826	Hz
Standard Deviation of f ₀	std	=	64.800	Hz
Frequency Perturbs in semi-tones	FT%	=	1.0	
Length of Analyzed Sample	Time	=	4.540	s
Analysis Offset	Time	=	0.000	sec
Window Function	Win	=	0.000	%
Relative Average Perturbation	std	=	4.300	%
Pitch Perturbation Quotient	Prq	=	0.000	%
Smoothed Pitch Period Quotient	ppq	=	50.000	%
Periodical Frequency Variation	var	=	00.000	%
Window to dB	dBdB	=	0.000	dB
Window Slope	dBdB	=	0.000	%
Amplitude Perturbation Quotient	APQ	=	00.000	%
Smoothed Amplitude Quotient	amq	=	00.000	%
Peak-Amplitude Variation	var	=	00.000	%
Index of Voice Breaks	IBI	=	00.000	%
Index of Sub-harmonics	SHI	=	00.000	%
Index of Voiceless	IVI	=	00.000	%
Index of Voice Breaks	IBI	=	00.000	%
Index of Sub-harmonic Segments	SHI	=	00.000	%
Index of Divided Segments	SDI	=	00.000	%
Index of Segmental Components	SCC	=	00.000	%
Total Pitch Periods Observed	PPO	=	00.000	%

APPENDIX 2
PERSONALITY APPRAISAL SCALE

Adjectives describing personality traits appear on the left side of this page and their opposites appear on the right with a 7-point scale rating between them. Please describe your impressions of the previous person by circling one number for each pair of opposites.

(Circle in directly below an actual instrument, but it is on the next page here due to formatting requirements).

1.	Talkative	1	0	3	6	9	6	7	allend
2.	Not Shy	1	1	3	6	9	6	7	Shy
3	Responsible	1	0	3	6	9	6	7	Responsible
4.	Amorous	1	0	3	6	9	6	7	Amorous
5.	Artistically sensitive	1	0	3	6	9	6	7	Artistically sensitive
6	Adventurous	1	0	3	6	9	6	7	Adventurous
7	Repetitive	1	0	3	6	9	6	7	Repetitive
8.	Exciting, flexible	1	1	3	6	9	6	7	Exciting
9.	Docile	1	1	3	6	9	6	7	Docile
10.	Unfriendly, hostile	1	1	3	6	9	6	7	Unfriendly
11.	Frank, Open	1	1	3	6	9	6	7	Frank
12.	Timid	1	1	3	6	9	6	7	Timid
13	Kind	1	1	3	6	9	6	7	Kind
14	Aggressive	1	1	3	6	9	6	7	Aggressive
(Hypothetical)									
15.	Kind, Friendly	1	1	3	6	9	6	7	Kind
16.	Docile	1	1	3	6	9	6	7	Docile
17.	Exciting	1	1	3	6	9	6	7	Exciting
18	Unfriendly	1	1	3	6	9	6	7	Unfriendly
19.	Kind, Open	1	1	3	6	9	6	7	Kind
20.	Kind, Open	1	1	3	6	9	6	7	Kind

APPENDIX E
PERSONAL REACTION SCALE

1. How trustworthy do you feel this person is as your manager?

1 2 3 4 5 6 7
not trustworthy neutral very trustworthy

2. The degree that you would comply with what this person asked you to do is:

1 2 3 4 5 6 7
never comply neutral always comply

3. How much do you think you would like this person?

1 2 3 4 5 6 7
extremely dislike neutral extremely like

4. The degree to which this person would persuade me to do things is:

1 2 3 4 5 6 7
never half the time always

5. How much would you help this person on the job?

1 2 3 4 5 6 7
never help neutral always help

6. I think this person's level of dominance is:

1 2 3 4 5 6 7
not at all dominant average extremely dominant

7. I think the level of this person's competence is:

1 2 3 4 5 6 7
incompetent average extremely competent

PERSONAL REACTION SCALE (continued)

8. If this person was my boss, I would not trust her/his very much.

1 2 3 4 5 6 7
strongly disagree neutral strongly agree

BIographical SKETCH

Timothy David Belmont was born February 14, 1928, in Windsor, Ontario, Canada. He worked in retail for over two years before returning to school to complete his B.S. in business at Florida State University in 1950. He also received his M.B.A. in Management at Florida State University in 1951. He has been married to Norma for 13 years. Together, they have four children: Allison, Joyce, Kenneth, and Ellen. He has accepted an assistant professor position at Catholic University of America in Washington, D.C.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


 Raymond J. Perreault, Chairman
 Professor of Management

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


 Henry J. Ford
 Professor of Management

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of DOCTOR of Philosophy.


 J. Herbert Kassar
 Associate Professor of Management
 The Florida State University

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


 Linda M. Crocker
 Professor of Foundations of Education